AEI Consultants

112 Water Street, 5th Floor, Boston, MA 02109

Tel: 857.350.3519

May 13, 2019

Mr. Frank Battaglia
USEPA
RCRA Corrective Action
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Mr. Jeffrey Crawford
RI DEM
Office of Waste Management
235 Promenade Street
Providence, RI 02908

REQUESTED

Re: Changes to CMI Work Plan
Former Ciba-Geigy Facility
Lot 1102, 180 Mill Street
Cranston, Rhode Island

Dear Frank and Jeff:

As of January 4, 2019, BASF completed the removal of PCB-impacted soils and the installation of a partial protective clean soil cover that includes the required sub-grade material in accordance with the Final Corrective Measures Implementation Work Plan (CMI WP), final dated April 30, 2018, which was approved by EPA on June 19, 2018 (liner material where remaining PCB concentrations exceed 10 ppm, and geocomposite over all remaining PCB soil impacts > 1 ppm), and a uniform one foot of clean soil, seeded and maintained to date. The one-foot soil cover was placed and maintained to provide a protective cover until weather conditions conducive to finalizing the soil cover and vegetation support are realized. Remaining field work includes final clean soil cover installation to required protectiveness metrics (material thickness) and associated contouring and vegetation planting. These items are planned to be implemented immediately after approval of this request for CMI WP modification with associated Attachments. Specifically, two considered minor changes in the approved CMI Work Plan are now proposed to better position a portion of the covered area to potentially be modified as a parking area (at present only a conceptual possibility) in accordance with the ELUR as contemplated in the CMI WP, and to be recorded with the property deed.

FINAL COVER MOD

<u>Requested Change No. 1: Alter clean soil cover contouring and vegetation plan</u>

BASF proposes to modify the soil cover contouring and vegetation plan to support the potential future use of a portion of the property as a parking lot, specifically that portion that is beyond the 200-foot setback from the river. This potential future use is supported by the contouring and vegetation plan provided in drawings RC-7 and RL-1 through 4. The plan includes the following changes

- Vegetation: The area beyond the 200' river setback will be maintained as an open field and planted with a wildflower mix, instead of the originally conceived upland habitat vegetation.
- Contouring: The area beyond the 200' setback will have a uniform grade, and the following alterations are proposed to accommodate surface water runoff control requirements associated with this design and potential parking area re-design (see drawing RC-7).
    - Stormwater retention basins have been moved to the periphery of the new open field.

- In the case that the open field is redesigned to support a parking area and assuming an impervious surface, stormwater flows from this area will be directed to the south toward several stormwater retention areas or towards lined tree wells which would be positioned in the central and peripheral portions of the property. Conceptually, stormwater runoff would follow the final grades depicted on drawing RC-7. Note that any property redevelopment beyond what is presented here will, at a minimum, be constrained by the ELUR as contemplated in the CMI WP, and to be recorded with the property deed.

GRAVEL/ CRUSHED STONE OR ASPHALT

Requested Change No. 2: Modify clean soil cover design to support stormwater retention areas

To support the proposed contour plan and surface water runoff controls, it is proposed to alter the cover associated with the stormwater retention areas to consist of 6-inches of crushed stone laid over 6-inches of imported compliant soil, instead of 24-inches of compliant soil. This modification will avoid the need to import considerable compliant fill material to otherwise provide the design slopes. This modification is consistent with the CMI WP, Section 4.2.2, which specifies the option of installing a 1 ft soil cover (as described above) in the retention areas in the event that a 24-inch soil cover could not be physically constructed. This approach also remains consistent with the approved flood storage volume specified in the FEMA-approved Conditional Letter of Map Revision (CLOMR) issued to BASF on September 24, 2018 (Case#: 18-01-1205R).

For any questions, please do not hesitate to call. Thank you.

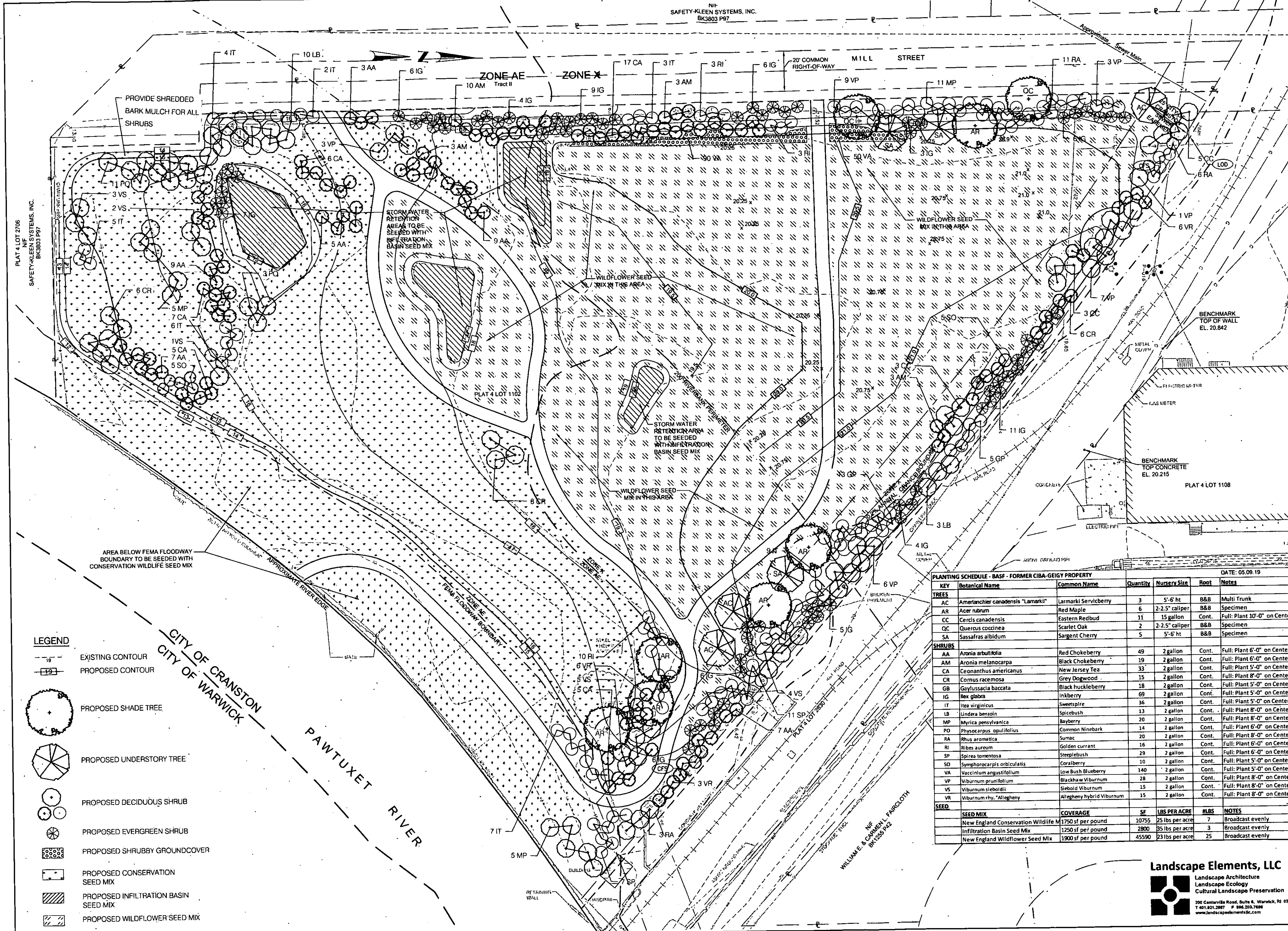
Sincerely,

AEI Consultants

Richard G. Kowalski, CPG, LSP, CHMM
Senior Hydrogeologist

Attachment

C: Joseph Guarnaccia, BASF



LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SHADE TREE
- PROPOSED UNDERSTORY TREE
- PROPOSED DECIDUOUS SHRUB
- PROPOSED EVERGREEN SHRUB
- PROPOSED SHRUBBY GROUNDCOVER
- PROPOSED CONSERVATION SEED MIX
- PROPOSED INFILTRATION BASIN SEED MIX
- PROPOSED WILDFLOWER SEED MIX

PLANTING SCHEDULE - BASF - FORMER CIBA-GEIGY PROPERTY			DATE: 05.09.19			
KEY	Botanical Name	Common Name	Quantity	Nursery Size	Root	Notes
TREES						
AC	Amerlanchier canadensis "Lamarkii"	Larmarki Servicberry	3	5'-6' ht	B&B	Multi Trunk
AR	Acer rubrum	Red Maple	6	2-2.5" caliper	B&B	Specimen
CC	Cercis canadensis	Eastern Redbud	11	15 gallon	Cont.	Full: Plant 10'-0" on Center
QC	Quercus coccinea	Scarlet Oak	2	2-2.5" caliper	B&B	Specimen
SA	Sassafras albidum	Sargent Cherry	5	5'-6' ht	B&B	Specimen
SHRUBS						
AA	Aronia arbutifolia	Red Chokeberry	49	2 gallon	Cont.	Full: Plant 6'-0" on Center
AM	Aronia melanocarpa	Black Chokeberry	19	2 gallon	Cont.	Full: Plant 6'-0" on Center
CA	Ceonanthus americanus	New Jersey Tea	33	2 gallon	Cont.	Full: Plant 5'-0" on Center
CR	Cornus racemosa	Grey Dogwood	15	2 gallon	Cont.	Full: Plant 8'-0" on Center
GB	Gaylussacia baccata	Black huckleberry	18	2 gallon	Cont.	Full: Plant 5'-0" on Center
IG	Ilex glabra	Inkberry	69	2 gallon	Cont.	Full: Plant 5'-0" on Center
IT	Itea virginicus	Sweetspire	36	2 gallon	Cont.	Full: Plant 5'-0" on Center
LB	Lindera benzoin	Spicebush	13	2 gallon	Cont.	Full: Plant 8'-0" on Center
MP	Myrica pensylvanica	Bayberry	20	2 gallon	Cont.	Full: Plant 8'-0" on Center
PO	Physocarpus opulifolius	Common Ninebark	14	2 gallon	Cont.	Full: Plant 6'-0" on Center
RA	Rhus aromatica	Sumac	20	2 gallon	Cont.	Full: Plant 8'-0" on Center
RI	Ribes aureum	Golden currant	16	2 gallon	Cont.	Full: Plant 6'-0" on Center
SP	Spirea tomentosa	Steeplebush	29	2 gallon	Cont.	Full: Plant 6'-0" on Center
SO	Symphorocarpis orbiculatis	Coralberry	10	2 gallon	Cont.	Full: Plant 5'-0" on Center
VA	Vaccinium angustifolium	Low Bush Blueberry	140	2 gallon	Cont.	Full: Plant 5'-0" on Center
VP	Viburnum prunifolium	Blackhaw Viburnum	28	2 gallon	Cont.	Full: Plant 8'-0" on Center
VS	Viburnum sieboldii	Siebold Viburnum	15	2 gallon	Cont.	Full: Plant 8'-0" on Center
VR	Viburnum rhy. "Allegheny	Allegheny hybrid Viburnum	15	2 gallon	Cont.	Full: Plant 8'-0" on Center
SEED						
	SEED MIX	COVERAGE	SF	LBS PER ACRE	#LBS	NOTES
	New England Conservation Wildlife M	1750 sf per pound	10755	25 lbs per acre	7	Broadcast evenly
	Infiltration Basin Seed Mix	1250 sf per pound	2800	35 lbs per acre	3	Broadcast evenly
	New England Wildflower Seed Mix	1900 sf per pound	45590	23 lbs per acre	25	Broadcast evenly

Landscape Elements, LLC
Landscape Architecture
Landscape Ecology
Cultural Landscape Preservation
200 Centerville Road, Suite 6, Warwick, RI 02886
T 401.921.2687 F 886.203.7686
www.landscapeelementsllc.com

PROJECT
BASF FORMER CIBA-GEIGY FACILITY
180 MILL STREET
CRANSTON, RHODE ISLAND

BASF
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CLIENT
AEI CONSULTANTS
112 WATER STREET, 5TH FLOOR
BOSTON, MA 02109

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
LANDSCAPE PLAN

REVISIONS

NO.	DATE		BY
1	5/09/19	LANDSCAPE UPDATED TO REFLECT REVISED GRADING	

PROJECT NO.: 1701

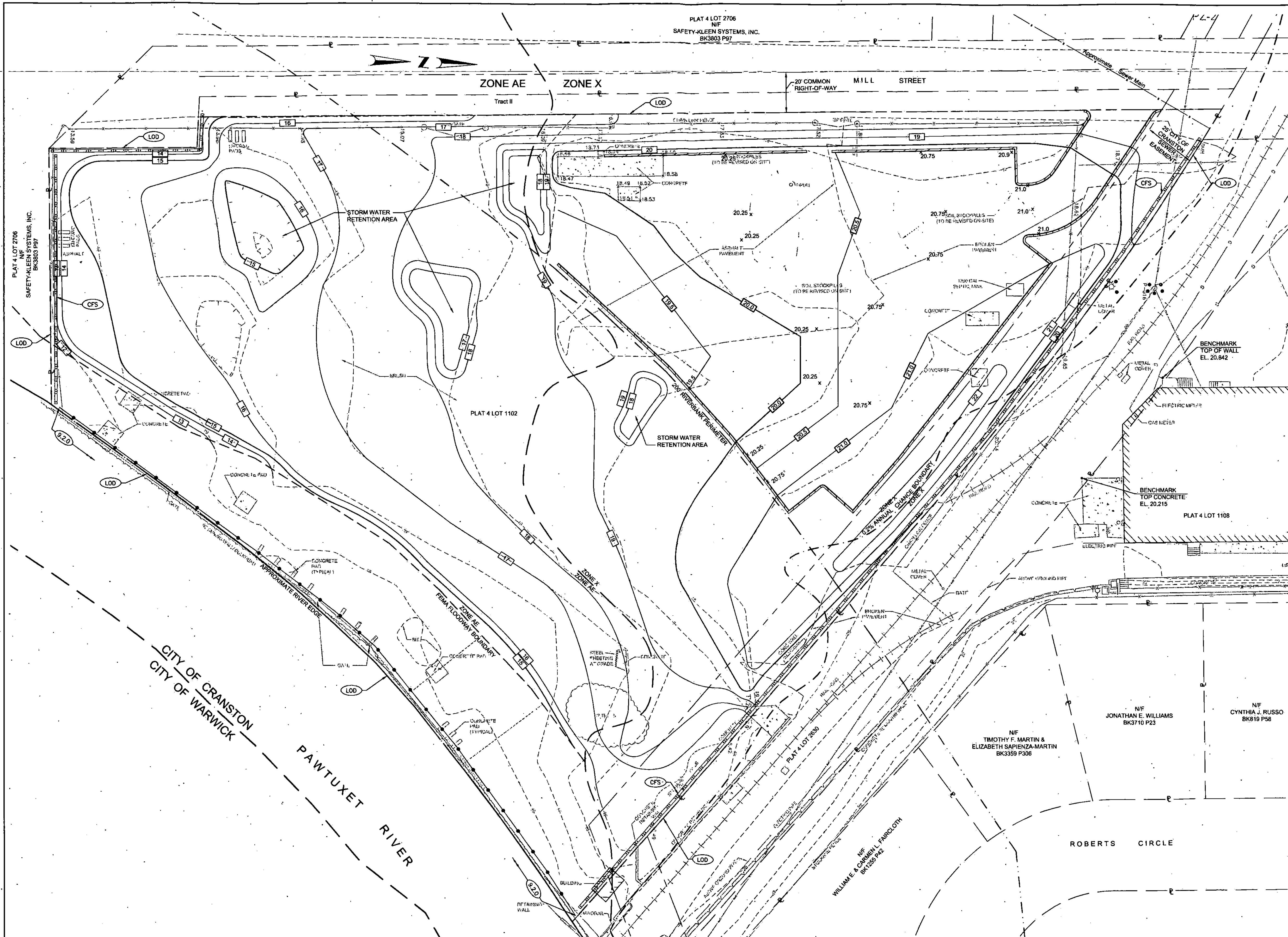
DATE: SEPTEMBER 1, 2017

SCALE: 1" = 20'

DRAWN BY: LBD

CHECKED BY: SPC

DRAWING NUMBER
RL-1
SHEET 1 OF 4


PLAT 4 LOT 2706
N/F
SAFETY-KLEEN SYSTEMS, INC.
BK3803 P97
ZONE AE
ZONE X
Tract II
20' COMMON RIGHT-OF-WAY
MILL STREET
Approximate Sewer Main
25' CITY OF CRANSTON SEWER EASEMENT
LOD
CFS
CHAIN LINK FENCE
CONCRETE
SOIL STOCKPILES (TO BE REVISED ON-SITE)
STORM WATER RETENTION AREA
ASPHALT PAVEMENT
BROKEN PAVEMENT
1200 GAL SEPTIC TANK
METAL COVER
BENCHMARK TOP OF WALL EL. 20.842
ELECTRIC METER
GAS METER
BENCHMARK TOP CONCRETE EL. 20.215
PLAT 4 LOT 1108
ELECTRIC PIPE
ABOVE GROUND PIPE
GATE
PLAT 4 LOT 1102
BRUSH
200' RIVERBANK PERIMETER
ZONE X
0.2% ANNUAL CHANCE BOUNDARY
ZONE X
ZONE AE
ZONE AE
FEMA FLOODWAY BOUNDARY
APPROXIMATE RIVER EDGE
CONCRETE PAD
CONCRETE PAD (TYPICAL)
STEEL SHEETING AT GRADE
CONCRETE RETAINING WALL
BUILDING
RETAINING WALL
HANDRAIL
RAILROAD
PLAT 4 LOT 2630
CITY OF CRANSTON
CITY OF WARWICK
PAWTUXET RIVER
N/F
WILLIAM E. & CARMEN L. FAIRCLOTH
BK1255 P42
N/F
TIMOTHY F. MARTIN &
ELIZABETH SAPIENZA-MARTIN
BK3359 P306
N/F
JONATHAN E. WILLIAMS
BK3710 P23
N/F
CYNTHIA J. RUSSO
BK819 P58
ROBERTS CIRCLE

PROJECT

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BOSTON, MA 02109

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Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE

FINAL GRADING PLAN

NO.	DATE	REVISIONS	BY
1	11/28/17	SHEET REVISED PER COMMENTS	
2	4/18/19	REVISED GRADING	
3	5/02/19	REVISED FINAL GRADING AND LIMIT OF DISTURBANCE	

PROJECT NO.: 1701

DATE: SEPTEMBER 1, 2017

SCALE: 1" = 20'

DRAWN BY: LBD

CHECKED BY: SPC

DRAWING NUMBER

RC-7

SHEET 1 OF X

F:\FILES\CAD\1701\Highway Plans\2017-SOUTH\1701-SOUTH GRADING PLAN.dwg 5/6/2019 4:04:07 PM, USER87

MIX FOR INFILTRATION BASINS

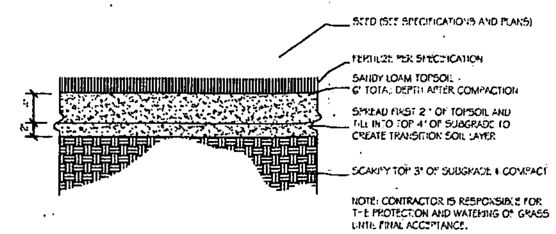
NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES - SPEC SHEET (PDF)

THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES CONTAINS A SELECTION OF NATIVE GRASSES AND WILDFLOWERS DESIGNED TO COLONIZE GENERALLY MOIST, RECENTLY DISTURBED SITES WHERE QUICK GROWTH OF VEGETATION IS DESIRED TO STABILIZE THE SOIL SURFACE. IT IS AN APPROPRIATE SEED MIX FOR ECOLOGICALLY SENSITIVE RESTORATIONS THAT REQUIRE STABILIZATION AS WELL AS LONG-TERM ESTABLISHMENT OF NATIVE VEGETATION.

THIS MIX IS PARTICULARLY APPROPRIATE FOR DETENTION BASINS THAT DO NOT HOLD STANDING WATER. MANY OF THE PLANTS IN THIS MIX CAN TOLERATE INFREQUENT INUNDATION, BUT NOT CONSTANT FLOODING. THE MIX MAY BE APPLIED BY HAND, BY MECHANICAL SPREADER, OR BY HYDRO-SEEDER. AFTER SOWING, LIGHTLY RAKE, ROLL OR CULTIPACK TO INSURE GOOD SEED TO SOIL CONTACT. BEST RESULTS ARE OBTAINED WITH A SPRING OR LATE SUMMER SEEDING. LATE FALL AND WINTER DORMANT SEEDING REQUIRES AN INCREASE IN THE APPLICATION RATE. A LIGHT MULCHING OF CLEAN, WEED-FREE STRAW IS RECOMMENDED.

APPLICATION RATE: 35 LBS/ACRE | 1250 SQ FT/LB
PRICE: $37.00/BULK POUND
MINIMUM ORDER: 3 LBS

SPECIES: RIVERBANK WILD RYE (ELYMUS RIPARIUS), CREEPING RED FESCUE (FESTUCA RUBRA), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), BIG BLUESTEM (ANDROPOGON GERARDII), SWITCH GRASS (PANICUM VIRGATUM), UPLAND BENTGRASS (AGROSTIS PERENNANS), NODDING BUR MARIGOLD (BIDENS CERNUA), HOLLOW-STEM JOE PYE WEED (EUPATORIUM FISTULOSUM/EUTROCHIUM FISTULOSUM), NEW ENGLAND ASTER (ASTER NOVAE-ANGLIAE), BONESET (EUPATORIUM PERFOLIATUM), BLUE VERVAIN (VERBENA HASTATA), SOFT RUSH (JUNCUS EFFUSUS), WOOL GRASS (SCIRPUS CYPERINUS).



WILDFLOWER AND CONSERVATION SEED MIX
NOT TO SCALE

NEW ENGLAND WETLAND PLANTS, INC
820 WEST STREET, AMHERST, MA 01002
PHONE: 413-548-8000 FAX 413-549-4000
EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM

New England Conservation/Wildlife Mix

Botanical Name	Common Name	Indicator
Elymus virginicus	Virginia Wild Rye	FACW-
Schizachyrium scoparium	Little Bluestem	FACU
Andropogon gerardii	Big Bluestem	FAC
Festuca rubra	Red Fescue	FACU
Sorghastrum nutans	Indian Grass	UPL
Panicum virgatum	Switch Grass	FAC
Chamaecrista fasciculata	Partridge Pea	FACU
Desmodium canadense	Showy Tick Trefoil	FAC
Asclepias tuberosa	Butterfly Milkweed	NI
Bidens frondosa	Beggar Ticks	FACW
Eupatorium purpureum (Eutrochium maculatum)	Purple Joe Pye Weed	FAC
Rudbeckia hirta	Black Eyed Susan	FACU-
Aster pilosus (Symphyotrichum pilosum)	Heath (or Hairy) Aster	UPL
Solidago juncea	Early Goldenrod	

PRICE PER LB. $39.50 MIN. QUANITY 2 LBS. TOTAL: $79.00 APPLY: 25 LBS/ACRE :1750 sq ft/lb

The New England Conservation/Wildlife Mix provides a permanent cover of grasses, wildflowers, and legumes For both good erosion control and wildlife habitat value. The mix is designed to be a no maintenance seeding, and is appropriate for cut and fill slopes, detention basin side slopes, and disturbed areas adjacent to commercial and residential projects.

New England Wetland Plants, Inc. may modify seed mixes at any time depending upon seed availability. The design criteria and ecological function of the mix will remain unchanged. Price is $/bulk pound, FOB warehouse, Plus SH and applicable taxes.

RI STATE WILDFLOWER MIX

58% LANCE LEAVED COREOPSIS .25 .5lbs MIXED TO RI STATE SPECS

22% OXEYE DAISY

10% WHITE YARROW

10% BLACKED EYED SUSAN

F.5.2.2. BIORETENTION SOIL

THE SOIL SHOULD BE A UNIFORM MIX, FREE OF STONE,STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHOULD BE MIXED OR DUPED WITH IN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE BIORETENTION SOIL SHOULD BE FREE OF NOXIOUS WEEDS.

THE BIORETENTION SYSTEM SHALL UTILIZE PLANTING SOIL HAVING A COMPOSITION AS FOLLOWS:

SAND: 85 - 88%
SOIL FINES: 8 TO 12% (NO MORE THAN 2% CLAY)
ORGANIC MATTER: 3 - 5%

*NOTE: FOR BIORETENTION APPLICATIONS WITH A SOIL DEPTH OF LESS THAN 4 FEET, ADD 20% (BY VOLUME) OF WELL AGED (3 MONTHS), WELL AERATED, LEAF COMPOST (OR APPROVED EQUIVALENT) TO THE ABOVE PLANTING SOIL MIXTURE. WHERE SOIL FINES CONTENT IS LESS THAN 12%, ADD A CORRESPONDING % OF LEAF COMPOST.

A TEXTURAL ANALYSIS IS REQUIRED TO ENSURE THE BIORETENTION SOIL MEET THE SPECIFICATION LISTED ABOVE. THE BIORETENTION SOIL SHOULD ALSO BE TESTED FOR THE FOLLOWING CRITERIA:

PH RANGE	5.2 - 7.0
MAGNESIUM	NO TO EXCEED 32 PPM
PHOSPHORUS P_2O_5	NOT TO EXCEED 69 PPM
POTASSIUM K_2O	NOT TO EXCEED 78 PPM
SOLUBLE SALTS	NOT TO EXCEED 500 PPM

ALL BIORETENTION AREAS SHOULD HAVE A MINIMUM OF ONE TEST. EACH TEST SHOULD CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS.

SINCE DIFFERENT LABS CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TESTING RESULTS SHOULD COME FROM THE SAME TESTING FACILITY.

SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.

INFILTRATION BASIN SEED MIX - APPLICATION RATE 3.5 PER 1,000 SF.

35% TURF TYPE TALL FESCUE
20% SMOOTH BROMEGRASS
30% CREEPING RED FESCUE
5% KENTUCKY BLUEGRASS
10% REDTOP

PROJECT
BASF FORMER CIBA-GEIGY FACILITY
180 MILL STREET
CRANSTON, RHODE ISLAND

BASF
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CLIENT
AEI CONSULTANTS
112 WATER STREET, 5TH FLOOR
BOSTON, MA 02109

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
LANDSCAPE DETAILS 3

REVISIONS

NO.	DATE	REVISIONS	BY
1	5-09-19	SHEET REPLACED	

PROJECT NO.: 1701

DATE: SEPTEMBER 1, 2017

SCALE: 1" = 20'

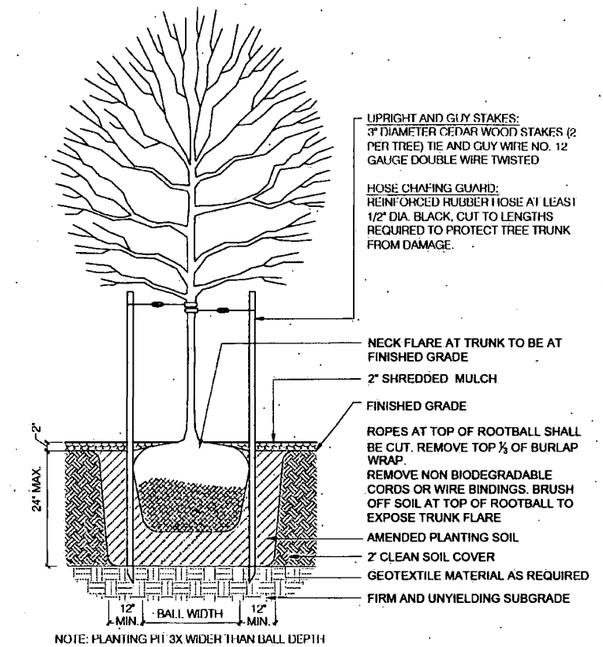
DRAWN BY: LBD

CHECKED BY: SPC

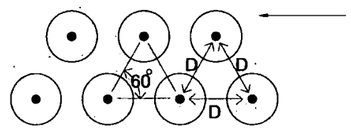
Landscape Elements, LLC
Landscape Architecture
Landscape Ecology
Cultural Landscape Preservation
200 Centerville Road, Suite 6, Warwick, RI 02886
T 401.921.2667 F 866.203.7686
www.landscapeelementsllc.com

DRAWING NUMBER
RL-4
SHEET 1 OF 4

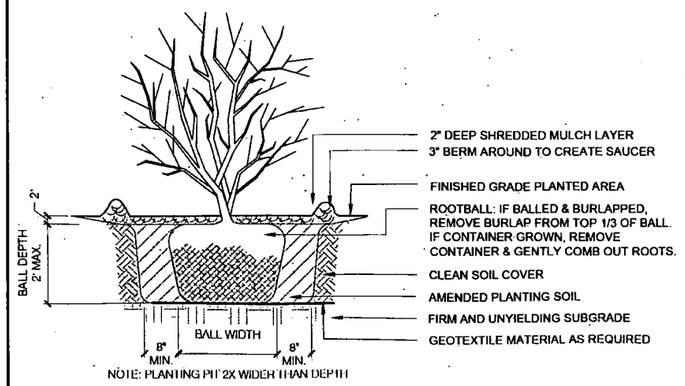
F:\FILES\CAD\1701\Landscape\Landscape Elements\5-9-19\1701-LANDSCAPE PLAN DETAILS may 09 2019.dwg 5/10/2019 8:55:21 AM, USER67



1 TREE PLANTING
SCALE: NTS



2 SHRUB AND HERBACEOUS PLANT SPACING
SCALE: NTS



3 SHRUB CONTAINER PLANTING
SCALE: NTS.

GENERAL PLANTING NOTES:

1) Containerized shrubs will be planted as shown on plant schedule.
2) For containerized stock, all plants should be pre-inspected by the planting contractor to help ensure quality, proper hardening (2-week minimum), and species correctness. Any dead, dying, stressed, or badly "root-bound" plants will be rejected. Holes will be dug twice the width and equal to the depth of the root ball of the plant. Holes will be watered before planting, then filled, tamping down the soil to remove air pockets, and watered again immediately. Care should be taken to ensure that the installed containerized materials are not covered by mulch at the time of product application.
3) The seed should be applied through broadcast seeding, hand-raked to ¼-to ½-inch depth to minimize seed loss, then surface-pressed through a water-filed press-wheel to facilitate good seed-to-soil contact. All seed must be labeled as 'certified' and should not include the presence of noxious or invasive species prohibited by the State of Rhode Island. All seed should be inspected prior to installation and all tags must be maintained for documentation by the resident engineer. Prior to delivery, seed should be processed by the seed provider on a "gravity-table" to remove non-target seed types and potentially invasive species. Seeding will only be performed between September 1 and when the ground freezes and when the ground thaws and June 1st.
4) No equipment will be allowed in the restoration area after seeding or planting.
5) Chemical and/or mechanical weed abatement should be facilitated by the client to assist in eradication of invasive and noxious weeds. The control of noxious and/or invasive species should be based upon site monitoring for a minimum of three-growing seasons following establishment. An iterative weed management plan should be implemented by the client based upon the results of monitoring.
6) Construction equipment, fuels, and other petroleum products shall not be stored or stockpiles with 50 feet of the creek or other aquatic habitats. Fueling should only occur within approved designated areas.

PROJECT
BASF FORMER CIBA-GEIGY FACILTY
180 MILL STREET
CRANSTON, RHODE ISLAND

BASF

AEI Consultants
Environmental & Engineering Services

CLIENT
AEI CONSULTANTS
112 WATER STREET, 5TH FLOOR
BOSTON, MA 02109

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
PLANT DETAILS, NOTES, & SCHEDULE

NO.	DATE	REVISIONS	BY

PROJECT NO.: 1701

DATE: FEBRUARY 2018

SCALE: AS NOTED

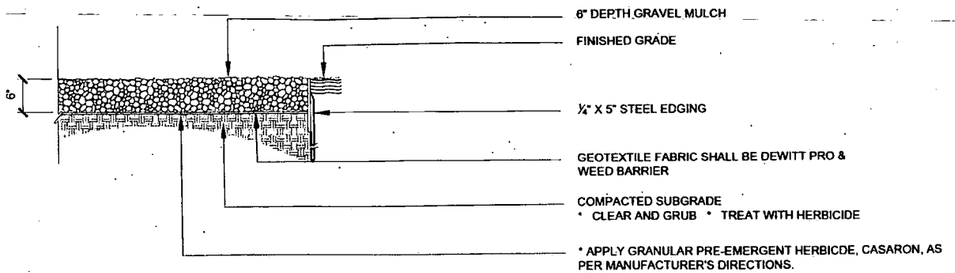
DRAWN BY: MK

CHECKED BY: LG

GREATecology
ENVIRONMENT + DESIGN
315 W 36th Street
10th Floor
New York, NY 10018
T: (212) 575-0800

DRAWING NUMBER
RL-2

SHEET X OF X



1 PEA GRAVEL MULCH
SCALE: NTS

2 STONE DUST PATHWAY
SCALE: NTS

PROJECT
BASF FORMER CIBA-GEIGY FACILITY
180 MILL STREET
CRANSTON, RHODE ISLAND

BASF

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Environmental & Engineering Services

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BOSTON, MA 02109

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Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
SITE DETAILS

NO.	DATE	REVISIONS	BY

PROJECT NO.: 1701

DATE: FEBRUARY 2018

SCALE: AS NOTED

DRAWN BY: MK

CHECKED BY: LG

DRAWING NUMBER
RL-3

SHEET X OF X

GREATecology
ENVIRONMENT + DESIGN
315 W 36th Street
10th Floor
New York, NY 10018
t: (212) 529-0000

FIGURE 1

PROJECT

BASF FORMER CIBA-GEIGY FACILITY
180 MILL STREET
CRANSTON, RHODE ISLAND

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BOSTON, MA 02109

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Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
FINAL GRADING PLAN

NO.	DATE	REVISIONS	BY
1	11/28/17	SHEET REVISED PER COMMENTS	

PROJECT NO.: 1701

DATE: SEPTEMBER 1, 2017

SCALE: 1" = 20'

DRAWN BY: LBD

CHECKED BY: SPC

DRAWING NUMBER
C-7

SHEET 8 OF 17

MILL STREET

MILL STREET

Tract II

PLAT 4 LOT 1102

PLAT 4 LOT 1108

PLAT 4 LOT 20.05

ZONE X
ZONE AE
FEMA FLOODWAY BOUNDARY

ZONE X
ZONE AE
FEMA 1% ANNUAL CHANCE BOUNDARY
ZONE X

CITY OF CRANSTON
CITY OF WARWICK

PAWTUXET RIVER

N/F
TIMOTHY F. MARTIN &
ELIZABETH SAPIENZA-MARTIN
BK3359 P306

N/F
JONATHAN E. WILLIAMS
BK3710 P23

N/F
CYNTHIA J. RUSSO
BK919 P58

N/F
WILLIAM E. & CARMEN L. FAIRCLOTH
BK1257 P42

ROBERTS CIRCLE

LEGEND

- PCBs: <1 PPM
- PCBs: >1 <10 PPM
- PCBs: >10 <25 PPM
- PCBs: >25 <50 PPM

FIGURE 2

PROJECT
BASF FORMER CIBA-GEIGY FACILITY
180 MILL STREET
CRANSTON, RHODE ISLAND

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112 WATER STREET, 5TH FLOOR
BOSTON, MA 02109

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
PCB CONCENTRATIONS

REVISIONS

NO.	DATE	BY

PROJECT NO.

DATE

SCALE: 1" = 20'

DRAWN BY:

CHECKED BY:

DRAWING NUMBER

SHEET OF

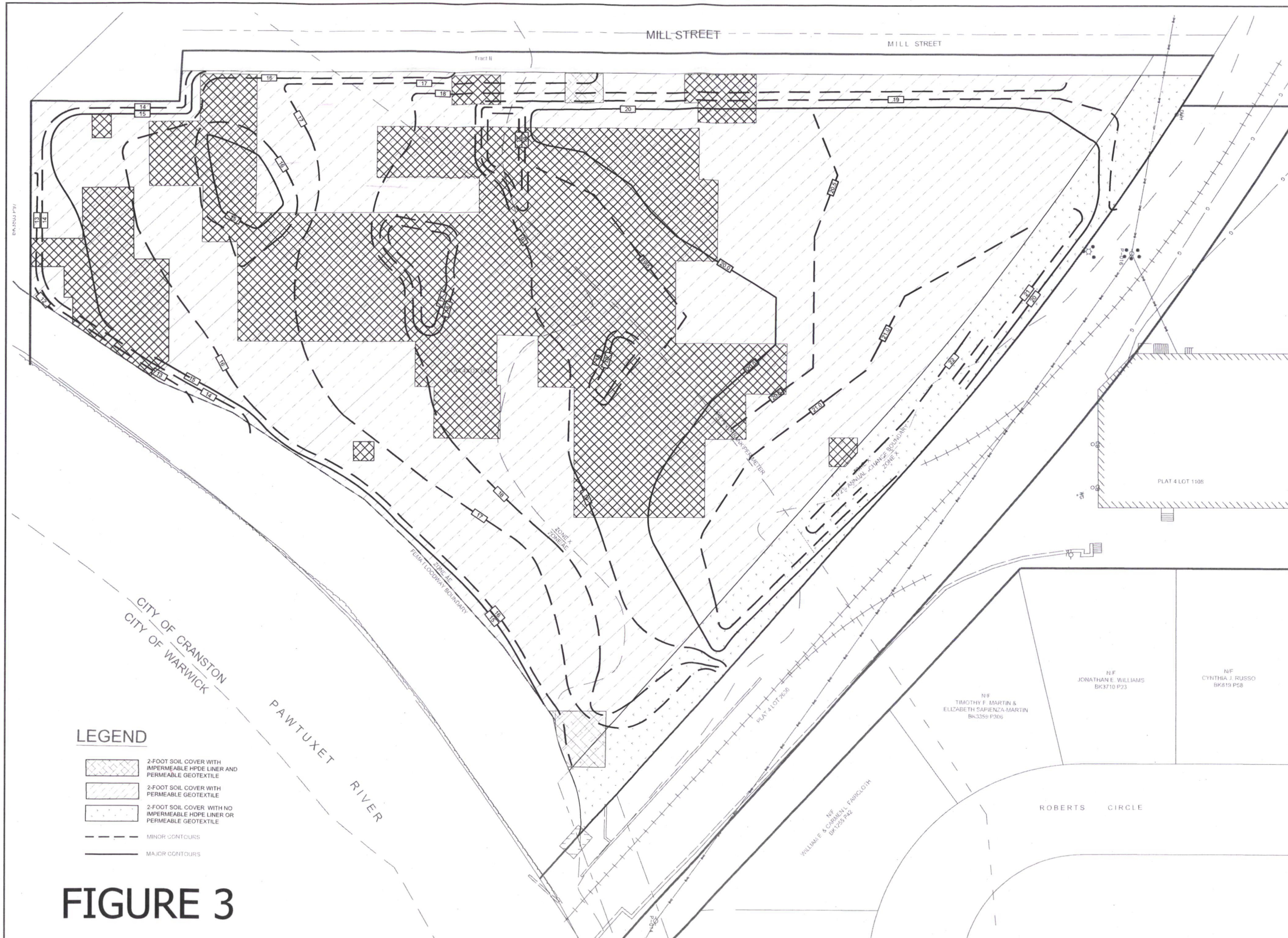
MILL STREET
MILL STREET
Tract II
ZONE X
ZONE AE
FEMA FLOODWAY BOUNDARY
ZONE AE
0.2% ANNUAL CHANCE BOUNDARY
ZONE X
PLAT 4 LOT 2630
PLAT 4 LOT 1108
P-016
CITY OF CRANSTON
CITY OF WARWICK
PAWTUXET RIVER
N/F
TIMOTHY F. MARTIN &
ELIZABETH SAPIENZA-MARTIN
BK3359 P306
N/F
JONATHAN E. WILLIAMS
BK3710 P23
N/F
CYNTHIA J. RUSSO
BK819 P58
N/F
WILLIAM E & CARMEN L FAIRCLOTH
BK1255 P42
ROBERTS CIRCLE
LEGEND
2-FOOT SOIL COVER WITH IMPERMEABLE HPDE LINER AND PERMEABLE GEOTEXTILE
2-FOOT SOIL COVER WITH PERMEABLE GEOTEXTILE
2-FOOT SOIL COVER WITH NO IMPERMEABLE HDPE LINER OR PERMEABLE GEOTEXTILE
MINOR CONTOURS
MAJOR CONTOURS

FIGURE 3

PROJECT
BASF FORMER CIBA-GEIGY FACILITY
180 MILL STREET
CRANSTON, RHODE ISLAND

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CLIENT
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BOSTON, MA 02109

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
FINAL COVER PLAN

NO.	DATE	REVISIONS	BY

PROJECT NO.:

DATE:

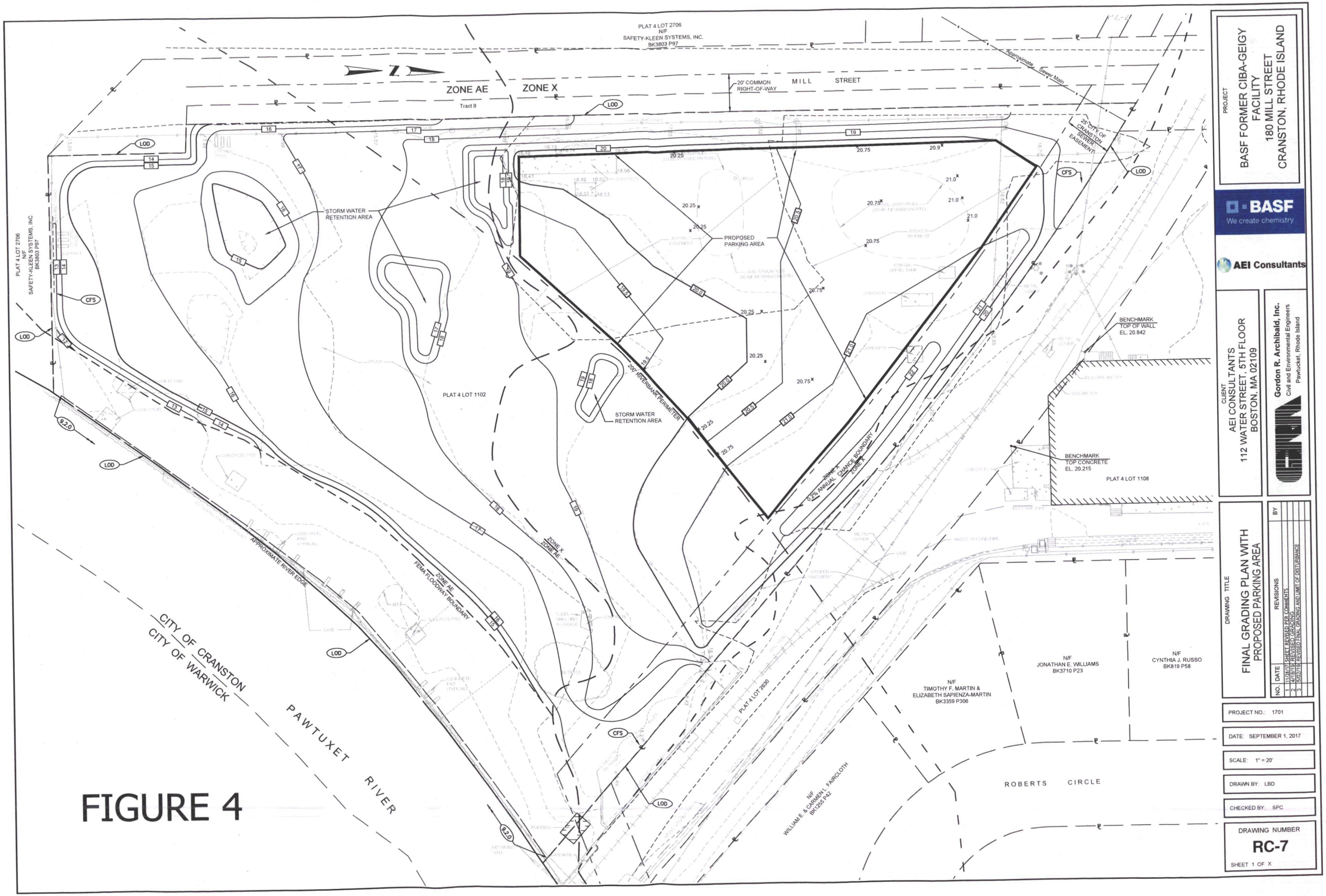
SCALE: 1" = 15'

DRAWN BY:

CHECKED BY:

DRAWING NUMBER

SHEET OF


PLAT 4 LOT 2706
N/F
SAFETY-KLEEN SYSTEMS, INC.
BK3803 P97
ZONE AE
ZONE X
Tract II
20' COMMON RIGHT-OF-WAY
MILL STREET
Approximate Sewer Main
25' CITY OF CRANSTON SEWER EASEMENT
LOD
CFS
STORM WATER RETENTION AREA
PROPOSED PARKING AREA
200' RIVERBANK PERIMETER
PLAT 4 LOT 1102
ZONE X
0.2% ANNUAL CHANCE BOUNDARY
ZONE X
ZONE AE
FEMA FLOODWAY BOUNDARY
APPROXIMATE RIVER EDGE
CITY OF CRANSTON
CITY OF WARWICK
PAWTUXET RIVER
PLAT 4 LOT 2630
N/F
WILLIAM E. & CARMEN L. FAIRCLOTH
BK1255 P42
BENCHMARK
TOP OF WALL
EL. 20.842
BENCHMARK
TOP CONCRETE
EL. 20.215
PLAT 4 LOT 1108
N/F
TIMOTHY F. MARTIN &
ELIZABETH SAPIENZA-MARTIN
BK3359 P306
N/F
JONATHAN E. WILLIAMS
BK3710 P23
N/F
CYNTHIA J. RUSSO
BK819 P58
ROBERTS CIRCLE
PROJECT
BASF FORMER CIBA-GEIGY FACILITY
180 MILL STREET
CRANSTON, RHODE ISLAND
BASF
We create chemistry
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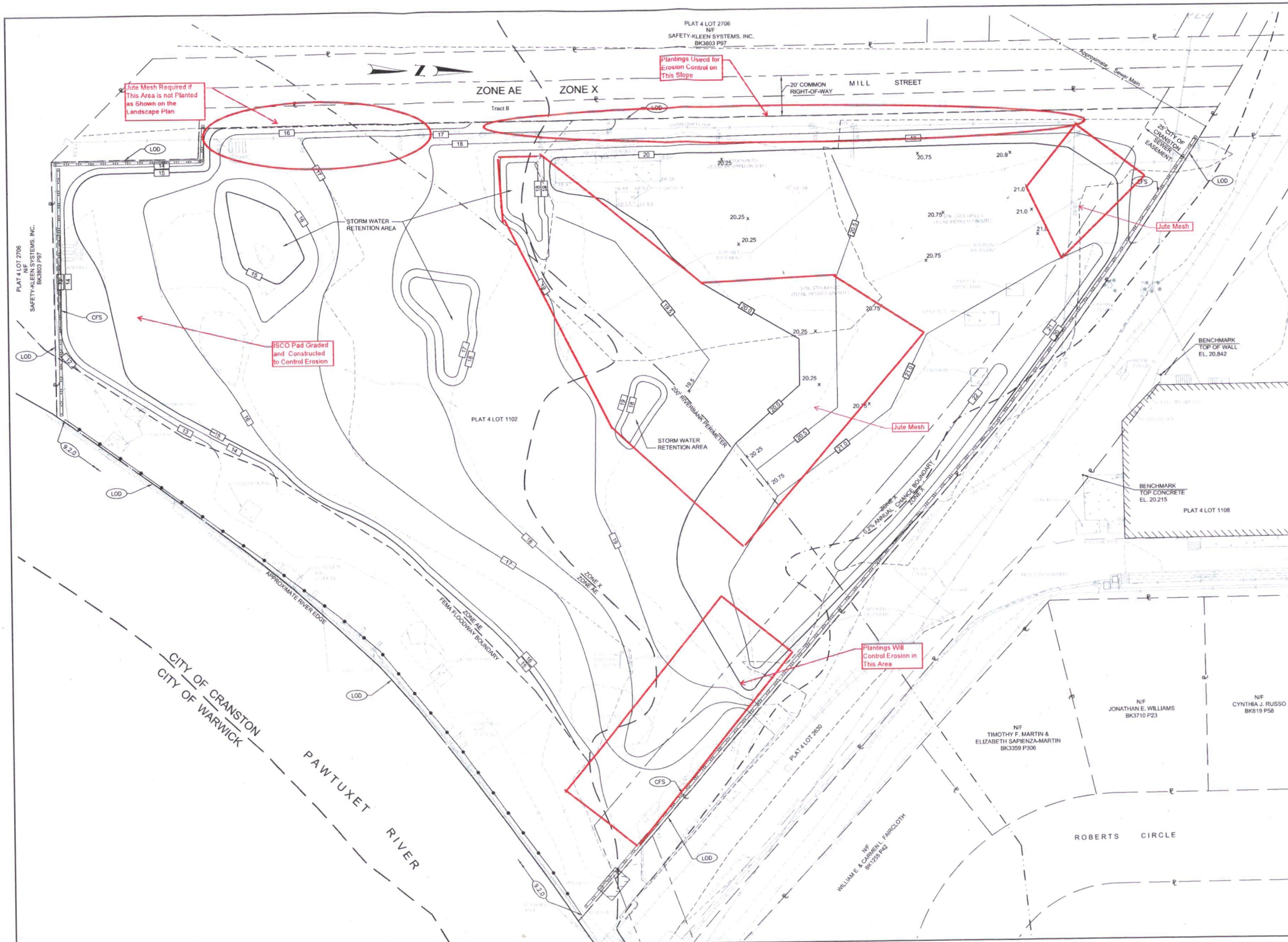
112 WATER STREET, 5TH FLOOR
BOSTON, MA 02109
Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island
DRAWING TITLE
FINAL GRADING PLAN WITH
PROPOSED PARKING AREA
NO. DATE REVISIONS BY
1 11/28/17 SHEET REVISED PER COMMENTS
2 4/18/19 REVISED GRADING
3 5/02/19 REVISED FINAL GRADING AND LIMIT OF DISTURBANCE
PROJECT NO.: 1701
DATE: SEPTEMBER 1, 2017
SCALE: 1" = 20'
DRAWN BY: LBD
CHECKED BY: SPC
DRAWING NUMBER
RC-7
SHEET 1 OF X

FIGURE 4



PROJECT
BASF FORMER CIBA-GEIGY FACILITY
180 MILL STREET
CRANSTON, RHODE ISLAND

BASF

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BOSTON, MA 02109

Gordon R. Archibald, Inc.
Civil and Environmental Engineers
Pawtucket, Rhode Island

DRAWING TITLE
FINAL GRADING PLAN

NO.	DATE	REVISIONS	BY
1	11/28/17	SHEET REVISED PER COMMENTS	
2	4/18/19	REVISED GRADING	
3	5/02/19	REVISED FINAL GRADING AND LIMIT OF DISTURBANCE	

PROJECT NO.: 1701

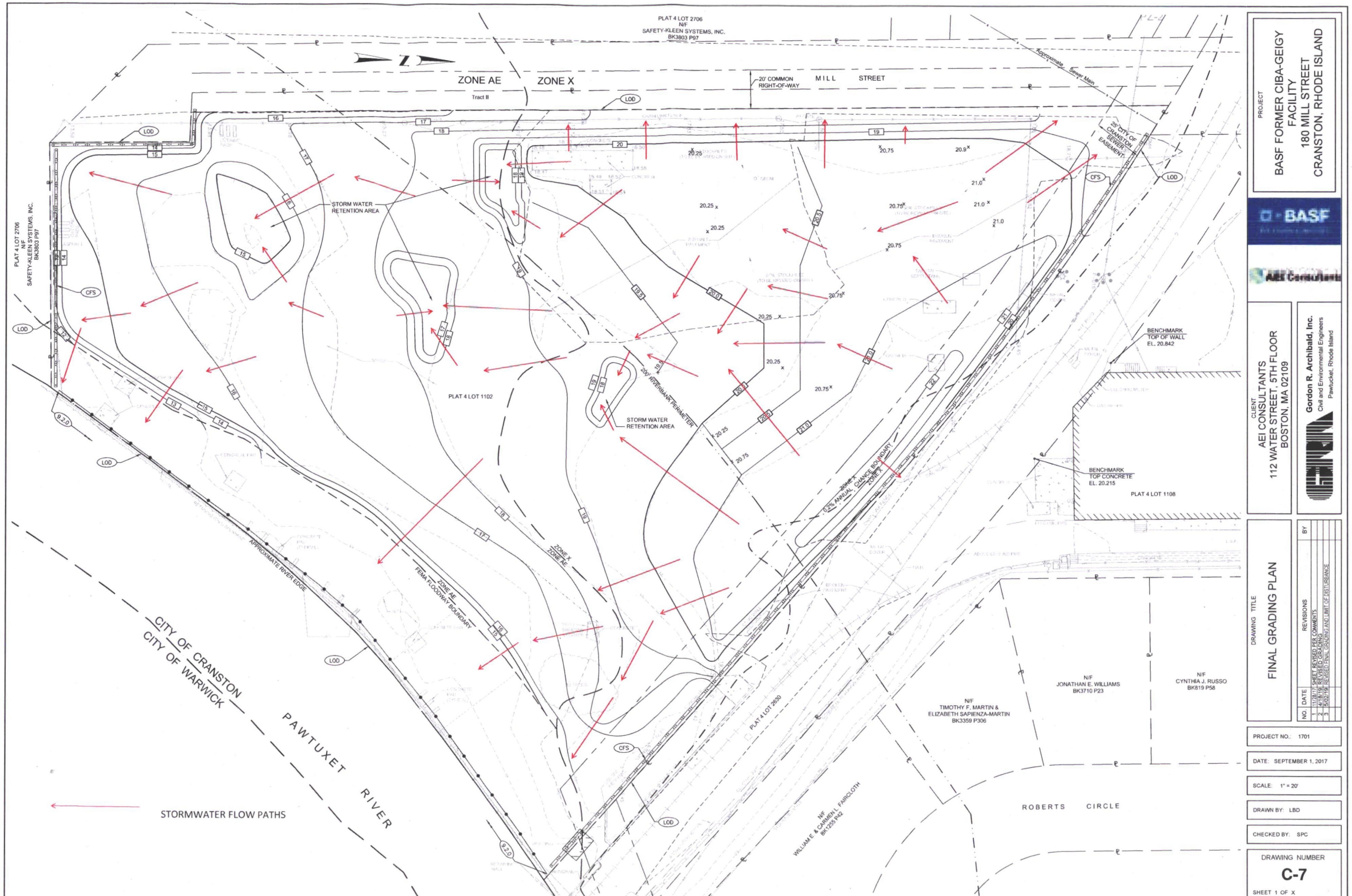
DATE: SEPTEMBER 1, 2017

SCALE: 1" = 20'

DRAWN BY: LBD

CHECKED BY: SPC

DRAWING NUMBER
C-7
SHEET 1 OF X



PLAT 4 LOT 2706
N/F
SAFETY-KLEEN SYSTEMS, INC.
BK3803 P97
N
ZONE AE
ZONE X
Tract II
20' COMMON RIGHT-OF-WAY
MILL STREET
Approximate Sewer Main
LOD
CFS
25' CITY OF CRANSTON SEWER EASEMENT
STORM WATER RETENTION AREA
PLAT 4 LOT 1102
200' RIVERBANK PERIMETER
ZONE X
ZONE AE
FEMA FLOODWAY BOUNDARY
0.2% ANNUAL CHANCE BOUNDARY
APPROXIMATE RIVER EDGE
CITY OF CRANSTON
CITY OF WARWICK
PAWTUXET RIVER
PLAT 4 LOT 2630
BENCHMARK
TOP OF WALL
EL. 20.842
BENCHMARK
TOP CONCRETE
EL. 20.215
PLAT 4 LOT 1108
N/F
TIMOTHY F. MARTIN &
ELIZABETH SAPIENZA-MARTIN
BK3359 P306
N/F
JONATHAN E. WILLIAMS
BK3710 P23
N/F
CYNTHIA J. RUSSO
BK819 P58
N/F
WILLIAM E. & CARMEN L. FAIRCLOTH
BK1255 P42
ROBERTS CIRCLE
STORMWATER FLOW PATHS
PROJECT
BASF FORMER CIBA-GEIGY FACILITY
180 MILL STREET
CRANSTON, RHODE ISLAND
BASF
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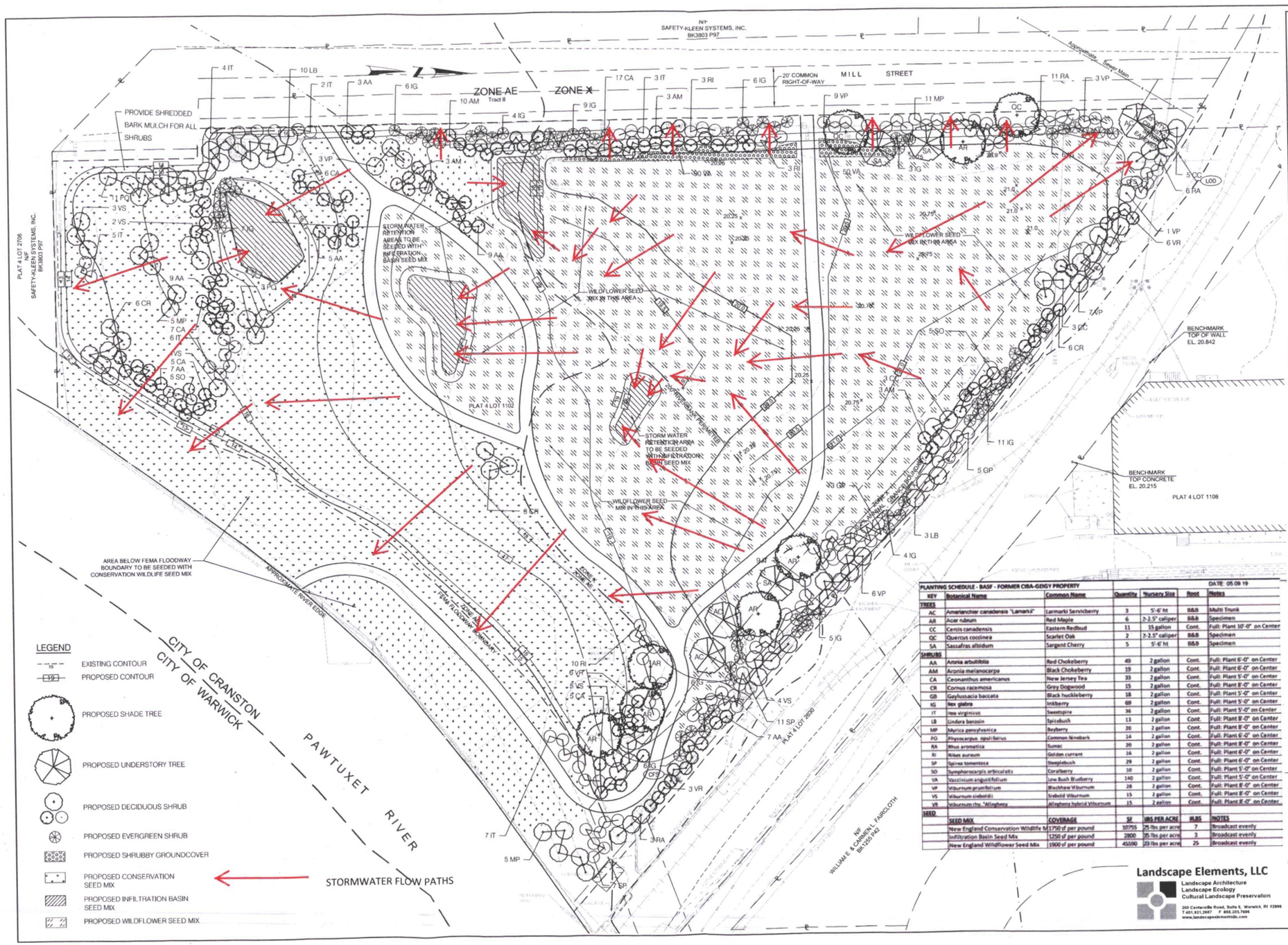
DRAWING TITLE
FINAL GRADING PLAN
NO. | DATE | REVISIONS | BY
1 | 11/28/17 | SHEET REVISED PER COMMENTS
2 | 4/18/19 | REVISED GRADING
3 | 5/02/19 | REVISED FINAL GRADING AND LIMIT OF DISTURBANCE
PROJECT NO.: 1701
DATE: SEPTEMBER 1, 2017
SCALE: 1" = 20'
DRAWN BY: LBD
CHECKED BY: SPC
DRAWING NUMBER
C-7
SHEET 1 OF X



PLANTING SCHEDULE - BASF - FORMER CIBA-GEIGY PROPERTY — DATE: 05 09 19

KEY	Botanical Name	Common Name	Quantity	*Nursery Size	Root	Notes
TREES						
AC	Amelanchier canadensis "Lamarkii"	Larmarki Serviceberry	3	5'-6' ht	B&B	Multi Trunk
AR	Acer rubrum	Red Maple	6	2-2.5" caliper	B&B	Specimen
CC	Cercis canadensis	Eastern Redbud	11	15 gallon	Cont.	Full: Plant 10'-0" on Center
QC	Quercus coccinea	Scarlet Oak	2	2-2.5" caliper	B&B	Specimen
SA	Sassafras albidum	Sargent Cherry	5	5'-6' ht	B&B	Specimen
SHRUBS						
AA	Aronia arbutifolia	Red Chokeberry	49	2 gallon	Cont.	Full: Plant 6'-0" on Center
AM	Aronia melanocarpa	Black Chokeberry	19	2 gallon	Cont.	Full: Plant 6'-0" on Center
CA	Ceonanthus americanus	New Jersey Tea	33	2 gallon	Cont.	Full: Plant 5'-0" on Center
CR	Cornus racemosa	Grey Dogwood	15	2 gallon	Cont.	Full: Plant 8'-0" on Center
GB	Gaylussacia baccata	Black huckleberry	18	2 gallon	Cont.	Full: Plant 5'-0" on Center
IG	Ilex glabra	Inkberry	69	2 gallon	Cont.	Full: Plant 5'-0" on Center
IT	Itea virginicus	Sweetspire	36	2 gallon	Cont.	Full: Plant 5'-0" on Center
LB	Lindera benzoin	Spicebush	13	2 gallon	Cont.	Full: Plant 8'-0" on Center
MP	Myrica pensylvanica	Bayberry	20	2 gallon	Cont.	Full: Plant 8'-0" on Center
PO	Physocarpus opulifolius	Common Ninebark	14	2 gallon	Cont.	Full: Plant 6'-0" on Center
RA	Rhus aromatica	Sumac	20	2 gallon	Cont.	Full: Plant 8'-0" on Center
RI	Ribes aureum	Golden currant	16	2 gallon	Cont.	Full: Plant 6'-0" on Center
SP	Spirea tomentosa	Steeplebush	29	2 gallon	Cont.	Full: Plant 5'-0" on Center
SO	Symphoricarpis orbiculatis	Coralberry	10	2 gallon	Cont.	Full: Plant 5'-0" on Center
VA	Vaccinium angustifolium	Low Bush Blueberry	140	2 gallon	Cont.	Full: Plant 8'-0" on Center
VP	Viburnum prunifolium	Blackhaw Viburnum	28	2 gallon	Cont.	Full: Plant 8'-0" on Center
VS	Viburnum sieboldii	Siebold Viburnum	15	2 gallon	Cont.	Full: Plant 8'-0" on Center
VR	Viburnum rhy. "Alleghany"	Alleghany Hybrid Viburnum	15	2 gallon	Cont.	Full: Plant 8'-0" on Center
SEED						
	SEED MIX	COVERAGE	SF	LBS PER ACRE	#LBS	NOTES
	New England Conservation Wildlife M	1750 sf per pound	10755	25 lbs per acre	7	Broadcast evenly
	Infiltration Basin Seed Mix	1250 sf per pound	2800	35 lbs per acre	3	Broadcast evenly
	New England Wildflower Seed Mix	1900 sf per pound	45690	29 lbs per acre	25	Broadcast evenly

Landscape Elements, LLC
Landscape Architecture
Landscape Ecology
Cultural Landscape Preservation
200 Centerville Road, Suite 6, Warwick, RI 02886
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PROJECT
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BASF

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DRAWING TITLE
LANDSCAPE PLAN

NO.	DATE	REVISIONS	BY
1	5/30/19	LANDSCAPE UPDATED TO REFLECT REVISED GRADING	

PROJECT NO.: 1701
DATE: SEPTEMBER 1, 2017
SCALE: 1" = 20'
DRAWN BY: LBD
CHECKED BY: SPC

DRAWING NUMBER
RL-1
SHEET 1 OF 4